VALITOV R. A.

USSR/Electronics - Literature

May 52

"New Books"

"Radio" No 5, p 62

Lists the following books: V. I. Siforov's "Radio Receiving Equipment", S. A. Drobov's "Radio Transmitting Equipment", R. A. Valitov and V. N. Sretenskiy's "Radio Measurements at Super-High Frequencies", V. D. Kryzhanovskiy's "Automobile radio Reception", and M. N. Savost'yanov's "Repair of Radio Equipment".

238T86

REMEZ, Grigoriy Abramovich; VALITOV, R.A., redaktor; GOROKHOVSKIY, A.V., redaktor; SOKOLOVA, R.Ya., tekhn. redaktor.

[Course in the basic radio measurements] Kurs osnovnykh radiotekhnicheskikh izmerenii. Moskva, Ges.izd-vo lit-ry po voprosam svyazi i radio, 1955 446 p. (MLRA 9:5)
(Radio measurements)

VALITOV, R.A.

Indicating instruments for measuring electromagnetic power in the centimeter wave range. Izm.tekh.no.4:38-40 Jl-Ag '56. (MLRA 9:11)
(Electric waves--Measurement)

VALITOV, R. A.,

"Transistorized Measuring Instruments," with Aleksandrov, A. I., and Akulov, I. I., p. 366

"Frequency Stabilization of Transistorized Oscillators with the Aid of Ticon[trade name] and Varicond [barium titanate] Capacitors," with Simonov, Yu. L., p. 383.

Semiconductor Devices and Their Uses; Collection of Articles, No. 2, Moscow, Izd-vo, "Sovetskoye radio," 1957.

VALITOV, R.A.; ALEKSANDROV, A.I.

Thermostats with use of semiconductors. Izm.tekh.no.1:64-65 Ja-F '57. (MLRA 10:4)
(Thermostat) (Semiconductors)

VALITOV, R.A. ; ALEKSANDROV, A.I.; AKULOV, I.I.

Semiconductor measuring instruments. Poluprov. prib. i ikh prim. no.2:366-376 '57. (MIRA 11:6)
(Transistors) (Radio measurements)

VALITOV, R.A.; SEMENOV, Yu.L.

Stabilizing the frequency of oscillators equipped with semiconductor triodes by titanium dioxide and barium titanate capacitors. Poluprov. prib. i ikh prim. no.2:383-385 '57. (MIRA 11:6)
(Oscillators, Transistor)

VALITOV R.A.

AUTHORS: Valitov, R.A., and Aleksandrov, P.A. 115-5-29/44

TITLE: Ponderomotive Rebound Force at Radiation of Electromagnetic Energy, and Utilization of it for the Purposes of Measurement (Ponderomotornaya sila otdachi pri izluchenii elektromagnitnoy energii i vozmozhnost' ispol'zovaniya eye dlya izmeritel'nykh tseley)

PERIODICAL: "Izmeritel'naya Tekhnika", No 5, Sep-Oct 1957, pp 67-68 (USSR)

ABSTRACT: The mechanical rebound moment created by the radiation of electromagnetic energy from a dipole or vibrator was experimentally studied and the possibility of utilizing the phenomenon for the purposes of measurements is discussed. Information on new measuring instruments based on this principle is referred to as given in the Soviet and foreign literature during the past years. The technology of experiments, with optic measurements of the twist angle (of an antenna) is described in detail. It was concluded that the system is most sensitive when placed into an absorbing cylindrical screen. The circular symmetry of ambient space provides for a constant sensitivity when the system is being rotated. The involved computation equations are derived. As considerable errors are possible in determination of two coefficients used

Card 1/2

Ponderomotive Rebound Force at Radiation of Electromagnetic Energy, and Utilization of it for the Purposes of Measurement

in the equations, the method is considered applicable for relative measurements only. As an example of application, there is mentioned the graduation of attenuators in the range of several milliwatt to ten times that number. Measuring the dielectric constant of gases is mentioned as another example. The angle twist, φ_1 and φ_2, when placed in dry air and in gas respectively, is calculated. It is presumed that some advantages of the method will be utilized in devising instruments for measurements of superhigh frequencies. There are 3 diagrams and 4 references (2 of which are Russian)

AVAILABLE: Library of Congress

Card 2/2

PHASE I BOOK EXPLOITATION 1011

Valitov, Rafkat Amirkhanovich and Sretenskiy, Vasiliy Nikolayevich

Radioizmereniya na sverkhvysokikh chastotakh (Microwave Measurements) 2d ed., rev. and enl. Moscow, Voyen. izd-vo M-va obor. SSSR, 1958. 411 p. No. of copies printed not given.

Ed.: Tikhonov, S. N.; Tech. Ed.: Strel'nikova, M. A.

PURPOSE: This book is addressed to engineers, technicians, and to students enrolled in vuzes.

COVERAGE: The monograph discusses particular problems of measurement technique in the metric, decimetric and centrimetric ranges. The discussions are accompanied by examples and short descriptions of the instruments involved, i.e., technical data and requirements. Basic considerations in selecting the individual components of measuring instruments and circuits are discussed, as well as the fundamentals of instrument error analysis.

Card 1/11

Microwave Measurements

Considerable attention has been given to broad-band measuring instruments. The book discusses several methods of measuring electrical quantities at frequencies below 100 Mc. Problems concerning measurement of vacuum-tube, antenna, transmitter and receiver parameters have not been discussed in this book, nor have certain special problems in error calculation (i.e., the effects of subjective factors). For this the reader is referred to Professor M. F. Malikov's book "Osnovy metrologii" (Fundamentals of Metrology), 1949. No personalities are mentioned. There are 9 references, all Soviet (including 3 translations).

TABLE OF CONTENTS:

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Microwave Measurements

Microwave Measurements

Microwave Measurements

AVAILABLE: Library of Congress

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JP/nah
12-31-58

VALITOV, R.A.

9(6) PHASE I BOOK EXPLOITATION SOV/1369

Burdun, Grigoriy Dmitriyevich, Rafkat Amirkhanovich Valitov, Lev Nikolayevich Bryanskiy, Vitaliy Dmitriyevich Kukush, and Vitaliy Ivanovich Pronenko

Radioizmereniya na millimetrovykh volnakh (Measurement of Millimeter Radio Waves) Izd-vo Kharkovskogo univ-ta, 1958. 121 p. 5,000 copies printed.

Ed. (Title page): Burdun, G.D., Professor; Ed. (Inside book): M.I. Prokopenko,; Tech. Ed.: Ya.T. Chernyshenko.

PURPOSE: The book is intended as a textbook for engineering students taking a course in superhigh-frequency radio measurements. It may also be used by scientists and engineers working in the field of radio measurement and dealing with superhigh frequencies.

COVERAGE: The author discusses basic problems of radio measurement in the millimeter band. He describes the methods and instruments used in measuring wavelength, frequency, power, attenuation,

Card 1/5

impedance, voltage standing-wave ratio, dielectric constant, and magnetic permeability. Signal generators and spectrum analyzers are not discussed. The book is the first attempt to systematize the material on measurement in the millimeter band. No personalities are mentioned. There are 56 references, of which 22 are Soviet (including 3 translations), 28 English, 4 French, 1 German, and 1 Czech.

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JP/atr
4-16-59

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SOV-115-58-4-36/45

AUTHORS: Valitov, R.A.; Aleksandrov, A.I.; Simonov, Yu.L.

TITLE: Miniature Measuring Instruments Using Transistors (Malogabaritnyye izmeritel'nyye pribory na poluprovodnikakh)

PERIODICAL: Izmeritel'naya tekhnika, 1958, Nr 4, pp 84-88 (USSR)

ABSTRACT: Three pieces of measuring apparatus based on transistors and built by the authors in 1956-1957 are described. (1) A crystal heterodyne wavemeter consisting of a stepless waveband oscillator, crystal auto-oscillator, mixer and AF amplifier for the 125-250 kc and 2-4Mc bands. The set is powered by batteries and consumes 10ma at 30v. Its characteristics are similar to those of the VG-526. (2) A signal generator consisting of carrier-frequency oscillator, power amplifier, crystal calibrator, audio-oscillator, carrier level and modulation factor indicator and voltage dividers. It can operate either on carrier frequency or with amplitude-modulated oscillation, and is used to

Card 1/2

Miniature Measuring Instruments Using Transistors SOV-115-58-4-36/45

measure the sensitivity of receivers in a range of 100kc-30Mc (first harmonic) and up to 150Mc (with upper harmonics). An RF voltage of from 10 μv-10mv can be obtained at the output. The apparatus is powered from a side-circuit at 27 ±3 v with a consumption of 1 w and its characteristics are similar to those of the GSS-6. (3) An RC audio-oscillator with stepless wavechange covering a waveband of 20-20,000 c and with an output of 0.15w at a load impedance of 600 ohm. It is powered from batteries and has a consumption of 0.36w. There are 3 circuit diagrams.

1. Measurement--Instrumentation 2. Transistors--Applications

Card 2/2

VALITOV, Rafkat Amirkhanovich, prof.; TARASOV, Vladislav Lukich; SHISHKIN, Leonid Adrianovich; TSARENKO, Viktor Timofeyevich; FILONENKO, Sergey Nikonovich; DOMANOVA, Yelena Alekseyevna; BARKANOV, Nikolay Arsent'yevich; SYTYY, Gennadiy Fedorovich; KURILOVA, T.M., red.; TROFIMENKO, A.S., tekhn. red.

[Measurement of transistor parameters] Izmereniia parametrov poluprovodnikovykh triodov. Khar'kov, Izd-vo Khar'kovskogo Gos. univ. im. A.M.Gor'kogo, 1960. 193 p. (MIRA 14:8)
(Transistors)

VALITOV, Rafkat Amirkhanovich, prof.; TARASOV, Vladislav Lukich; SHISHKIN, Leonid Adrianovich; TSARENKO, Viktor Timofeyevich; FILONENKO, Sergey Nikonovich; DOMANOVA, Yelena Alekseyevna; BARKANOV, Nikolay Arsent'yevich; SYTYY, Gennadiy Fedorovich;

[Measurement of transistor parameters]Izmereniia parametrov poluprovodnikovykh triodov. Khar'kov, Izd-vo Khar'kovskogo univ., 1960. 193 p. (MIRA 16:4)
(Transistors)

VALITOV, Rafkat Amirkhanovich, prof.; TARASOV, Vladislav Lukich; SHISHKIN, Leonid Adrianovich; TSARENKO, Viktor Timofeyevich; FILONENKO, Sergey Nikonovich; DOMANOVA, Yelena Alekseyevna; BARKANOV, Nikolay Arsent'yevich; SYTIY, Gennadiy Fedorovich; KURILOVA, T.M., red.; TROFIMENKO, A.S., tekhn. red.

[Measurement of transistor parameters] Izmereniia parametrov poluprovodnikovykh triodov. Pod red. R.A.Valitova. Khar'kov, Izd-vo Khar'kovskogo univ., 1960. 193 p. (MIRA 16:3)
(Transistors)

S/115/60/000/05/21/034
B007/B011

AUTHORS: Valitov, R. A., Vikhrov, G. P., Navderov, V. Z.

TITLE: Some Cases of the Use of Electronic Pulse Counters in Measuring Technology

PERIODICAL: Izmeritel'naya tekhnika, 1960, No. 5, pp 41-44

TEXT: The principles underlying the construction of electronic measuring devices with digital indication, based on the use of pulse counters, had been described in the papers of Refs. 1, 2, 3. The authors examined several special cases in which electronic pulse counters were used in calibration test systems. Frequency dividers with adjustable dividing ratio are first dealt with, and the two possible types of construction are shown in connection. The block diagram relating to the second type is shown in Fig. 1 and explained. This method is based on the possibility of availing oneself of a pulse to bring an n-chain of series-connected binary cells into such a position as corresponds to an arbitrary number of stored pulses smaller than 2^n. Diagrams of the conditions with time in the

Vc

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divider are shown in Fig. 2. On the basis of the divider shown here, circuits can be set up for the conversion and the production of electric oscillations. The production of delayed pulses is investigated next. The principle consists in the separation of 2 pulses from their periodic sequence, with these 2 pulses standing apart from one another by M discrete periods of this sequence. The block diagram of a variant of such a system is shown in Fig. 3 and explained. The deficiencies exhibited by this circuit are pointed out, and a block diagram free of these deficiencies is shown in Fig. 4. It features additional cascades for the selection of the pedestal pulse and of the delayed output pulse. The mode of selection of these two pulses is shown here. To produce groups of pulses with a precisely known number of pulses as well as a determined repetition frequency of such groups, the circuits given here can be used. It is pointed out that such circuits can be also utilized for the production of rectangular pulses of a controllable and adjustable duration. For this purpose, a forming trigger with a cascade at the output must be introduced into the circuits given in Figs. 3 and 4, respectively. A simplified block diagram for the production of rectangular pulses is shown in Fig. 7 and explained.

Some Cases of the Use of Electronic Pulse Counters in Measuring Technology

S/115/60/000/05/21/034
B007/B011

It is stated in conclusion that the circuits dealt with here can be utilized for the construction of calibration test devices for various purposes. The use of semiconductors is recommended for such devices to increase their reliability and economy, and to reduce dimensions and weight. There are 7 figures and 5 references: 3 Soviet and 2 German.

Card 3/3

VALITOV, Rafkat Amirkhanovich; PALATOV, Konstantin Ivanovich; CHERNYY, Arkadiy Yevelevich; TRET'YAKOVA, A.N., red.; SMILYANSKAYA, T.M., tekhn. red.

[Methods for measuring the principal characteristics of fluctuating signals] Metody izmereniia osnovnykh kharakteristik fluktuatsionnykh signalov. Pod red. R.A.Valitova. Khar'kov, Izd-vo Khar'kovskogo gos. univ. im. A.M.Gor'kogo, 1961. 140 p. (MIRA 15:4)

(Radio measurements) (Radio--Testing)

S/057/61/031/012/008/013
B104/B112

AUTHORS: Valitov, R. A., Kukush, V. D., Orlov, V. G.

TITLE: Experiment on direct conversion of the energy of an electromagnetic superhigh-frequency field into kinetic energy

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 12, 1961, 1462-1466

TEXT: P. N. Lebedev was the first to demonstrate that the pressure of light (energy of an electromagnetic field) can be converted into potential energy (Izbrannyye proizvedeniya. Pod redaktsii A. K. Timiryazeva, Izd. tekhniko-teoreticheskoy literatury, 1949). An attempt has now been made to convert the energy of a superhigh-frequency field into kinetic energy by utilizing the pondermotive forces acting upon a well conducting plate placed across a waveguide. For a circular traveling waveguide, in which a test specimen may move in a circle, the following equation of motion of the specimen is obtained:

$$I\frac{d^2\alpha}{dt^2} + A\frac{d\alpha}{dt} + M_{fr} = M_p,$$ where I is the moment of inertia of the moving

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Experiment on direct conversion...

system, α the angle of rotation, A a proportionality factor relating the moment produced by the aerodynamic resistance to the angular velocity, M_{fr} the moment of frictional forces, and M_p the moment of pondermotive forces. With the solutions of this system the expected speeds of a real system are estimated. $M_p = 35 \cdot 10^{-3}$ dyne·cm is obtained for a power input of 40 w, an amplification factor of the traveling wave resonator of $N^2 = 10$, a reflection factor $|Q| = 0.5$ of the specimen, a λ/λ_w ratio of 0.75 (λ is the wavelength in free space and λ_w that in the waveguide), and a mean radius of 3.5 cm of the circular waveguide. $M_{fr} = 8.0 \cdot 10^{-5}$ dyne·cm is obtained for a coefficient of friction of 0.13 and a mass of the moving system of 50 mg. A is estimated by an empirical formula as being 0.245 dyne·cm·sec/rad. Thus, $\omega = 142 \cdot 10^{-3}$ rad/sec (n = 1.36 rpm). A device used for checking these results is described. It consists of a magnetron generator (1) (Fig. 1), an attenuator (2), a pondermotive wattmeter (3), a traveling wave resonator (4) with a moving system, a directional coupler (5), a detection section (6), and a load (7). The

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moving system is a centrally supported pivoting arm with metal disks at the end. With a power input of 40 w and an amplification factor of 3, the disks placed at a distance equivalent to five half-wave lengths had a period of 47 sec. The acceleration time of the system was 10 sec. The period could be reduced to 15 sec using filaments instead of disks. The low efficiency of energy conversion (about 10^{-9}%) is attributed to losses on the waveguide walls. V. G. Mikhaylik participated in the experiments. There are 4 figures and 6 references: 4 Soviet and 2 non-Soviet. The two references to English-language publications read as follows: A. L. Cullen, Proc. IEE, 99, IV, 45 - 50, 1952; F. I. Tischler. IRE, 5, 51, 1957.

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet im. A. A. Gor'kogo (Khar'kov State University imeni A. M. Gor'kiy)

SUBMITTED: December 12, 1960

VALITOV, R.A.; KUKUSH, V.D.; ORLOV, V.G.

Ponderomotive power meter. Izm.tekh. no.7:32-37 Jl '62. (MIRA 15:6)
(Frequency measurements)

L 10606-63 EWT

ACCESSION NR: AR3005181 S/0058/63/000/006/E040/E040

SOURCE: RZh. Fizika, Abs. 6 Zh255

AUTHOR: Sheyko, V. P.; Valitov, R. A.

TITLE: Account of influence of width of microwave generator signal spectrum in operation with steplike reflecting grating array

CITED SOURCE: Uch. zap. Khar'kovsk. un-t, v. 1a7, 1962, Tr. Radiofiz. fak., v. 6, 83-86

TOPIC TAGS: Microwave oscillation , reflection, grating array

TRANSLATION: Some features of the application of optical methods of spectral analysis of microwave generator oscillations are considered. The dispersion and the angular shift of the spectral maxima upon reflection of a normally incident signal from the broadband steplike grating is calculated. The probable error in the measurement of the wavelength of the spectral line, brought about by the non-monochromaticity of the signal, is determined. The method proposed by the

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ACCESSION NR: AR4014770 S/0058/63/000/012/H019/H020

SOURCE: RZh. Fizika, Abs. 12Zh134

AUTHOR: Valitov, R. A.; Domanova, Ye. A.; Ivashkevich, E. D.

TITLE: Use of the Hall effect in semiconductors for automatic stabilization of the microwave power level

CITED SOURCE: Uch. zap. Khar'kovsk. un-t, v. 132, 1962. Tr. Radiofiz. fak., v. 7, 141-145

TOPIC TAGS: Hall effect, semiconductor, microwave power control, microwave power stabilization, Hall effect attenuator

TRANSLATION: A scheme is described for the stabilization of the level of microwave power in a waveguide channel in which the regulating element is an attenuator which makes use of the Hall effect in semiconductors (abstract 12 Zh135). A block diagram of the sta-

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ACCESSION NR: AR4014770

bilizer is given and its construction and characteristics are described. The stabilization range is ~6 dB. In this range, the stabilization coefficient is 96 and the stabilization accuracy is 0.25 dB. The possibility of considerably improving the characteristics of this stabilizer, and the advantages of the described stabilization method over existing ones, are pointed out. K. Yermilin.

DATE ACQ: 24Jan64 SUB CODE: PH, GE ENCL: 00

Card 2/2

ACCESSION NR: AR4014771 S/0058/63/000/012/H020/H020

SOURCE: RZh. Fizika, Abs. 12Zh135

AUTHORS: Valitov, R. A.; Domanova, Ye. A.

TITLE: Microwave power attenuator based on variation of the electric conductivity of an intrinsic semiconductor through the Hall effect

CITED SOURCE: Uch. zap. Khar'kovsk. un-t, v. 132, 1962, Tr. Radiofiz. fak, v. 7, 146-151

TOPIC TAGS: Hall effect, semiconductor, microwave power control, microwave power stabilization, Hall effect attenuator, n type germanium

TRANSLATION: The possibility of controlling the flux of electromagnetic energy by varying the electric conductivity, through the Hall

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ACCESSION NR: AR4014771

effect in intrinsic semiconductors, is theoretically verified. A practical use of this phenomenon is described for a microwave power attenuator with linear attenuation scale. A semiconductor plate inserted in the waveguide at an angle of 30° to its longitudinal axis (to reduce the reflections) so as to cover the entire waveguide cross section, is situated in crossed electric and magnetic fields. The absorption coefficient of the specially processed plate depends in this case on the magnitude of the electric and magnetic fields. The attenuation produced by the plate can be varied smoothly by changing the control voltage applied to its ends. Experimental data are presented on such an attenuator with a plate made of polycrystalline n-type Ge, operating at 9370 Mcs. The use of a pulsed control voltage extends the range of linear attenuation by a factor of several times (in this case from 5 to 12 dB). It is indicated that the limits of the attenuation can be greatly increased and the standing wave ratio decreased by using thinner semiconductors of higher resistivity. Among the noted advantages of this method of attenu-

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ACCESSION NR: AR4014771

ation over the existing ones are a greater bandwidth and practical absence of time lag. K. Yermilin.

DATE ACQ: 24Jan64 SUB CODE: PH, GE ENCL: 00

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ACCESSION NR: AR4023764 S/0274/64/000/001/A077/A078

SOURCE: RZh. Radiotekhnika i elektrosvyaz', Abs. 1A506

AUTHOR: Valitov, R. A.; Kukush, V. D.; Orlov, V. G.

TITLE: Ponderomotive power measuring instrument

CITED SOURCE: Uch. zap. Khar'kovsk. un-t, v. 132, 1962, Tr. Radiofiz. fak., v. 7, 176-190

TOPIC TAGS: ponderomotive power meter, ponderomotive wattmeter, electric wattmeter errors, mechanical wattmeter errors, capacitive susceptance, microwave wattmeter

TRANSLATION: Two silver rectangular plates spaced $\lambda_b/4$ apart are glued to a rigid quartz rod in a vertical waveguide section. A mirror is glued to the same rod. The rotation angle is indicated by a light beam reflected from the mirror onto a scale. The calibra-

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ACCESSION NR: AR4023764

tion of the ponderomotive wattmeter is by two means: electric and mechanical. The electric calibration coefficient K_e determines the connection between the power and the rotation angle, and depends on the frequency:

$$K_e \sim [1 - (\lambda_0/\lambda_{cr})^2]^{1/2}.$$

In the case of mechanical calibration, one determines experimentally the per-unit torque of the suspension filament K_m:

$$P = \frac{K_m}{K_e}\Delta\theta.$$

To compensate for the capacitive susceptance of the plates, inductive posts were placed in the waveguide. The VSWR at $\theta = 45°$, in the 3.1--3.3 cm range, is then ≤ 1.12. The main error of the ponderomotive wattmeter is determined by the calibration error and by the

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ACCESSION NR: AR4023764

angle-measurement error. Theoretically $(\Delta P/P)_{max} = 3.4\%$. A comparison with a precision calorimetric instrument at 9380 Mc at a VSWR equal to 1.05 yielded $\Delta P/P = 1.2\%$. The readings of several wattmeters differed by $\leq 0.5\%$. V. R.

DATE ACQ: 03Mar64 SUB CODE: GE, SD ENCL: 00

Card 3/3

VALITOV, R.A. Prinimali uchastiye: LEYKIN, A.Ya.; SIDORENKO, B.G.; KUKOLEVA, T.V., red.; BELYAYEVA, V.V., tekhn. red.

[Radio-engineering measurements] Radiotekhnicheskie izmereniia. Moskva, Sovetskoe radio, 1963. 631 p. (MIRA 16:8)

(Radio measurements)

AKULOV, I.I.; BARZHIN, V.Ya.; VALITOV, R.A.; GARMASH, Ye.N.; KUCHIN, L.F.; NAYDEROV, V.Z.; PUTSENKO, V.V.; SEMENOVSKIY, V.K.; SIMONOV, Yu.L.; TARASOV, V.L.; TEREKHOV, N.K.; SHEVYRTALOV, Yu.B.; YUNDENKO, I.N.; CHISTYAKOV, N.I., otv. red.; KOKOSOV, L.V., red.; TRISHINA, L.A., tekhn.red.

[Theory and design of principal radio circuits using transistors] Teoriia i raschet osnovnykh radiotekhnicheskikh skhem na tranzistorakh. [By] I.I.Akulov i dr. Moskva, Sviaz'izdat, 1963. 452 p. (MIRA 16:8)

(Transistor circuits) (Electronic circuits)

S/115/63/000/004/008/011
E140/E135

AUTHORS: Valitov R.A., and Vikhrov G.P.

TITLE: The error of digital time-interval meters and the improvement of their accuracy by the method of averaging

PERIODICAL: Izmeritel'naya tekhnika, no.4, 1963, 44-47

TEXT: The authors propose to improve the accuracy of digital counter type time interval meters by averaging the [illegible] automatically [illegible] thus avoiding the need for faster circuits using higher clock rates.
There are 2 figures and 5 tables.

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VALITOV, R.A.; DOMANOVA, Ye.A.; TSARENKO, V.T.

Device for stabilizing the power of microwave oscillations in a wide frequency range. Radiotekh. i elektron. 8 no.10:1793-1795 O '63. (MIRA 16:10)

ACCESSION NR: AP4040755 S/0142/64/007/002/0253/0256

AUTHOR: Valitov, R. A.; Domanova, Ye. A.; Tsarenko, V. T.

TITLE: Waveguide broadband power stabilizer

SOURCE: IVUZ. Radiotekhnika, v. 7, no. 2, 1964, 253-256

TOPIC TAGS: waveguide element, standing wave ratio, microwave equipment, power stabilizer

ABSTRACT: A stabilizer is described, capable of maintaining the load power constant within several per cent in a frequency range of 20%. The stabilizer is made broad-band by using an electrically controlled germanium-slab attenuator with a rectifying p-n junction. The input measuring element is a gas-discharge junction. Whenever the waveguide power deviates from the minimum level, an error signal modifies the admittance of the germanium slab and restores the power level. The accuracy of the apparatus is estimated at 3.5% when the

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ACCESSION NR: AP4040755

input power drops by 10 dB from not less than 2 mW initial level. The stabilizer can be used as an attachment to a sweep generator of the klystron type with mechanical automatic tuning provided the fm signal is additionally modulated in amplitude at approximately 1 kcs frequency. Orig. art. has: 4 figures and 5 formulas.

ASSOCIATION: None

SUBMITTED: 13Aug63 ENCL: 03

SUB CODE: EC NR REF SOV: 004 OTHER: 000

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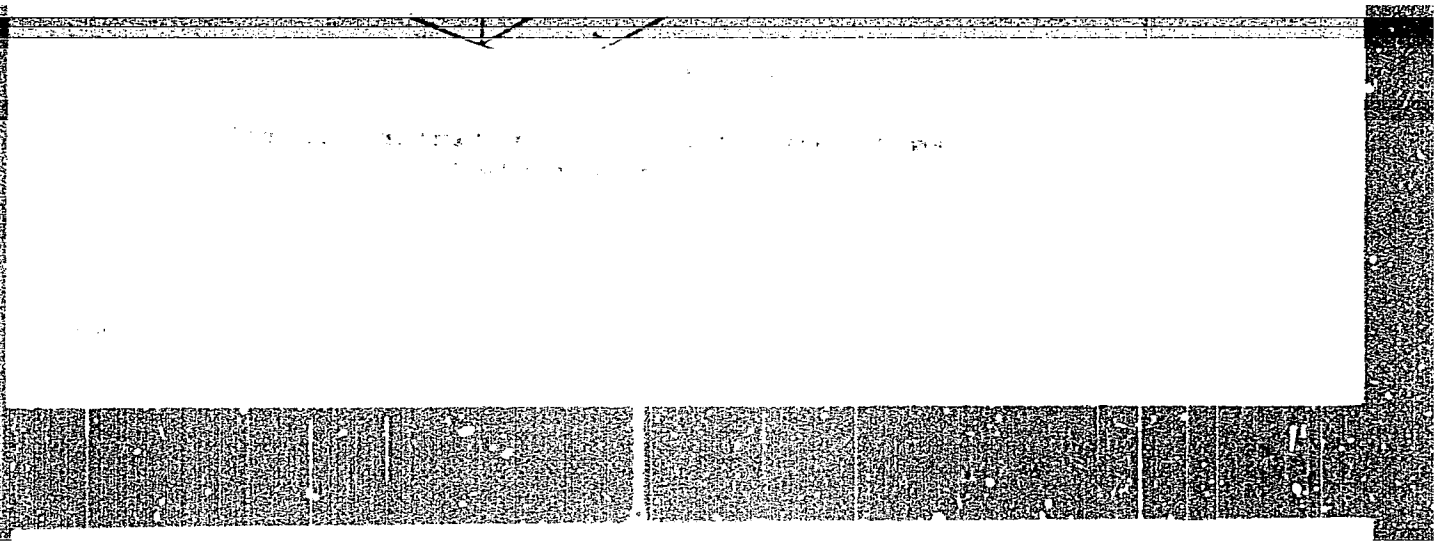

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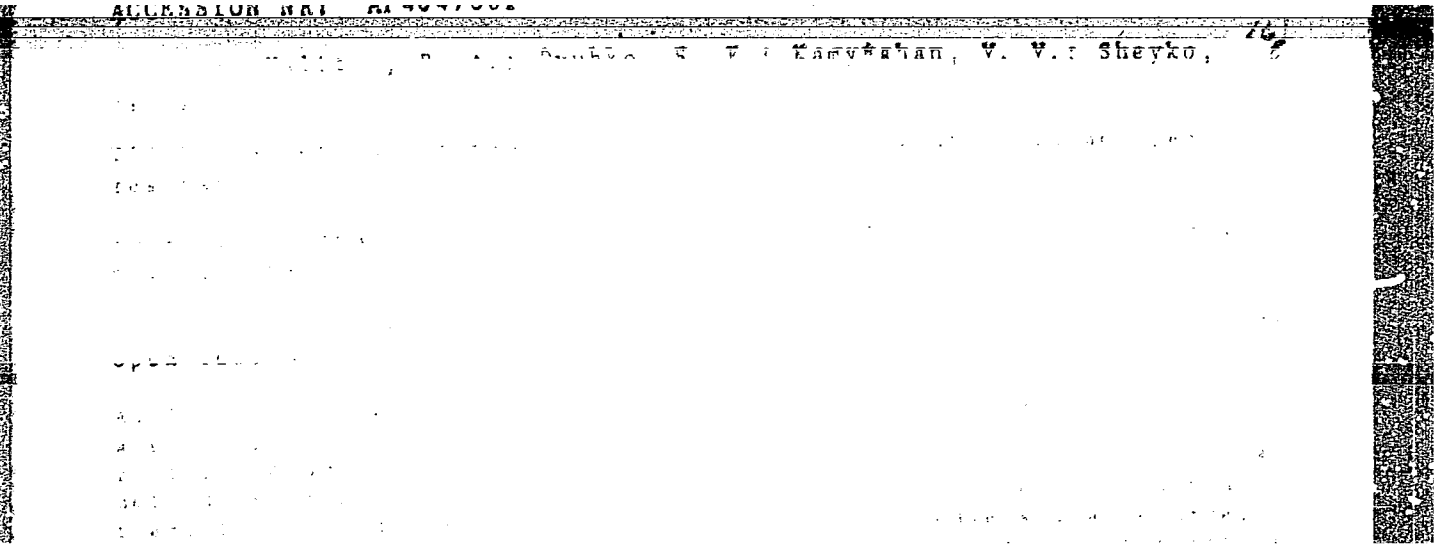

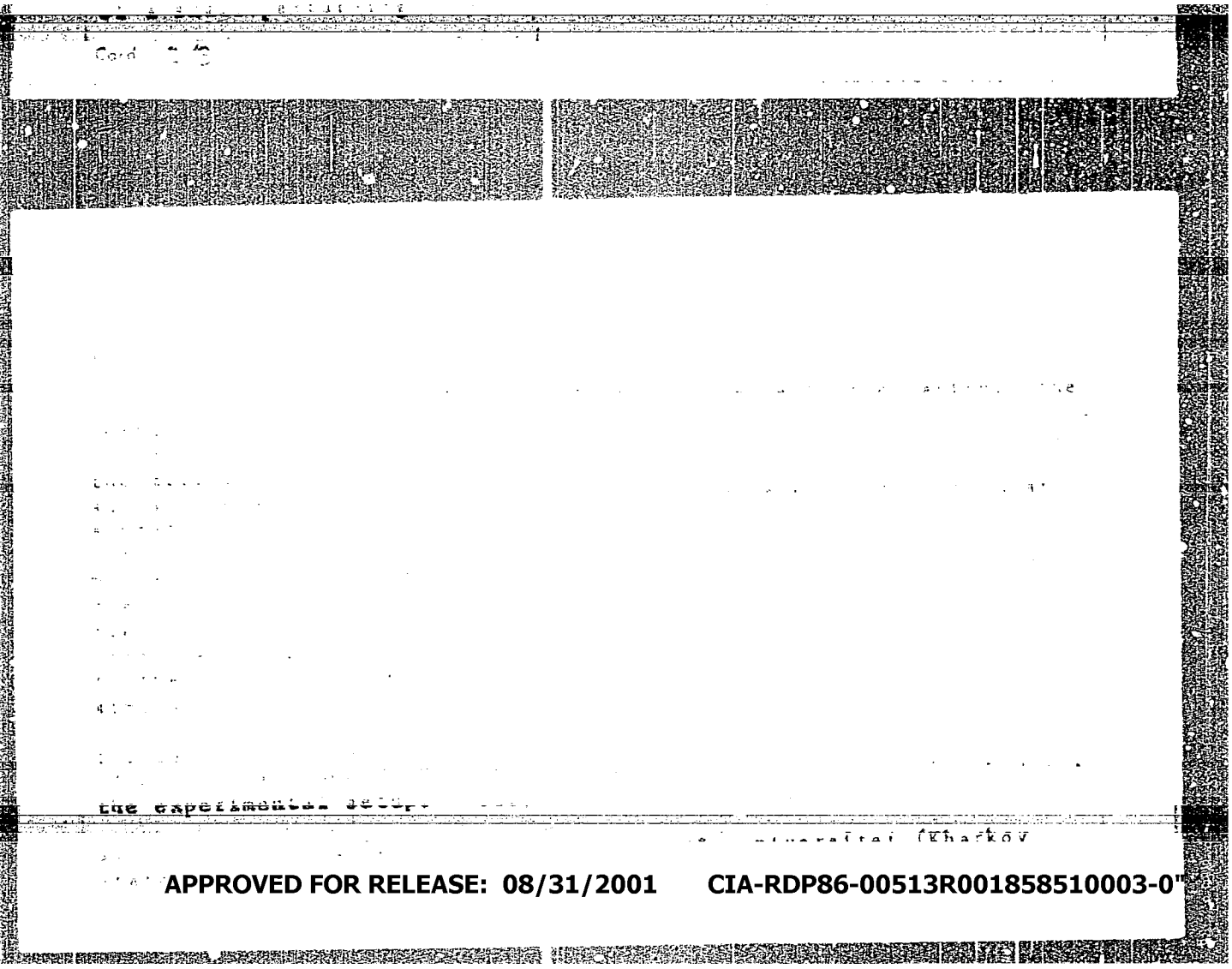

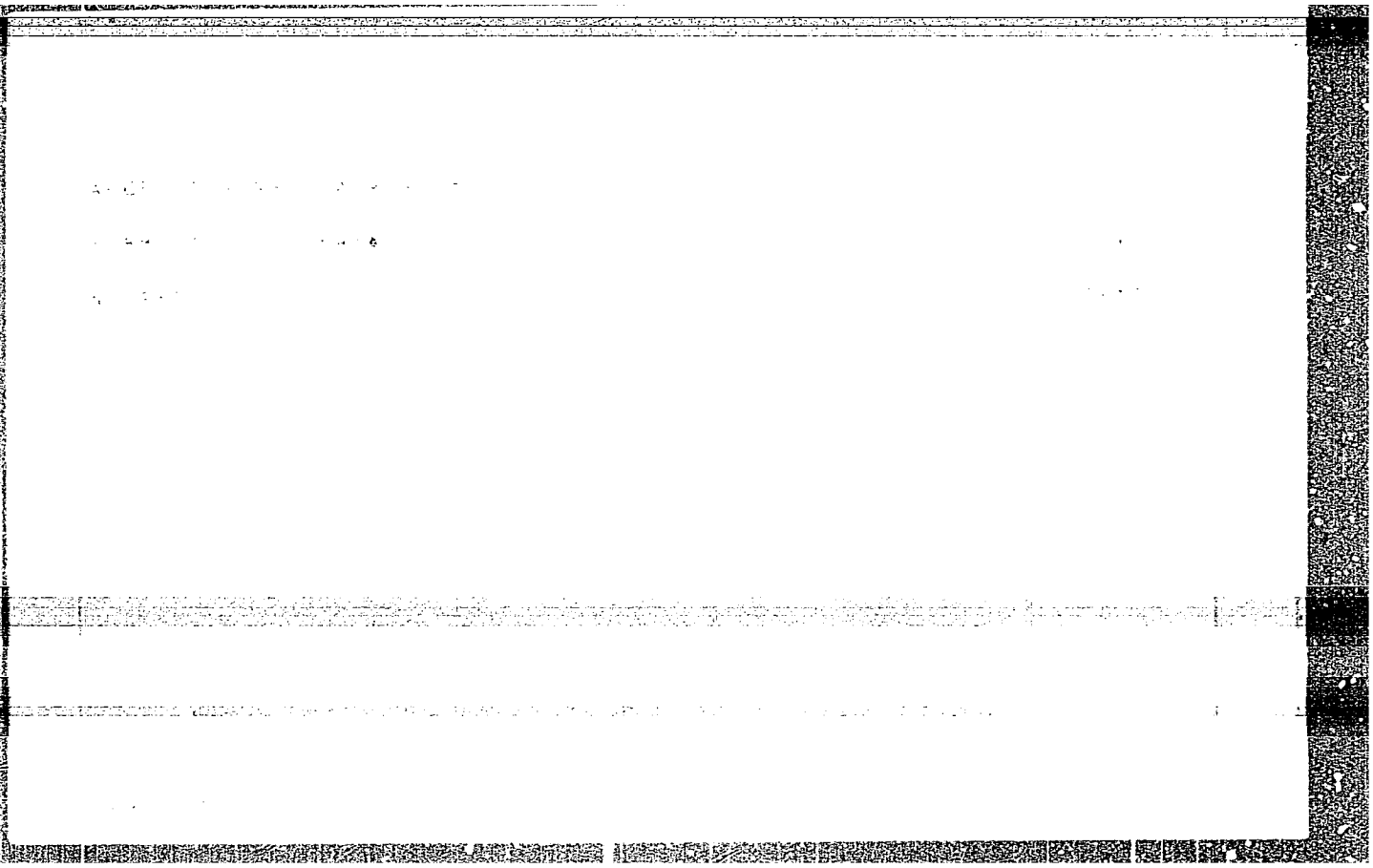

L 18466-66 FSS-2/EWT(l)/ETC(f)/EPF(n)-2/EWG(m)

ACC NR: AP6002557 SOURCE CODE: UR/0286/65/000/023/0056/0056

AUTHORS: Kuz'michev, V. M.; Polovnikov, G. G.; Valitov, R. A.

ORG: none

TITLE: Optical range differential calorimeter. Class 42, No. 176707

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 23, 1965, 56

TOPIC TAGS: calorimeter, optic black body

ABSTRACT: This Author Certificate presents an optical range differential calorimeter containing a thermally insulated case with windows behind which are placed two radiation receptors. The receptors are identical copper conical black body simulators with calibration helices spaced to insure opacity of the cone from the helix to the normally incident radiation. The calorimeter also contains a thermal battery in contact with the surfaces of the conical simulator and a recording device (see Fig. 1). For simultaneous and independent determination of two incoming energies and their difference, the calorimeter contains additional reference conical black body simulators. Thermal batteries making contact with the side

Card 1/2

UDC: 535.23.082.63.002.56

L 18466-66

ACC NR: AP6002557

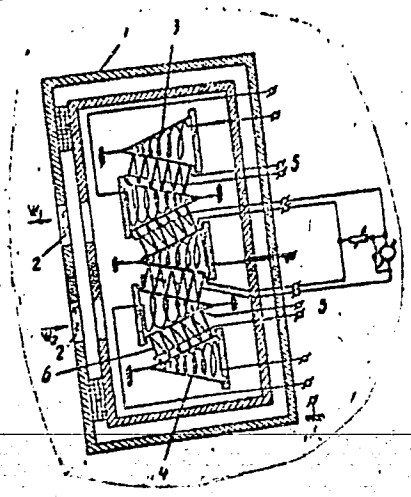

Fig. 1. 1 - case; 2 - window; 3 - conical black body simulator; 4 - calibration helix; 5 - galvanometers; 6 - thermal battery.

surfaces of the radiation receptors are connected in opposition in the measuring circuit. Orig. art. has: 1 diagram.

SUB CODE: 20/ SUBM DATE: 23May64

Card 2/2

AKULOV, I.I.; BARZHIN, V.Ya.; VALITOV, R.A.; GARMASH, Ye.N.; KUCHIN, L.F.; NAYDEROV, V.Z.; PUTSENKO, V.V.; SEMENOVSKIY, V.K.; SIMONOV, Yu.L.; TARASOV, V.L.; TEREKHOV, N.K.; SHEVYRTALOV, Yu.B.; YUNDENKO, I.N.; CHISTYAKOV, N.I., prof., otv. red.; KOKOSOV, L.V., red.

[Theory and design of basic radio circuits using transistors] Teoriia i raschet osnovnykh radiotekhnicheskikh skhem na tranzistorakh. Moskva, Sviaz', 1964. 454 p. (MIRA 18:8)

VALITOV, R.A.; KALININ, Yu.A.; KUZ'MICHEV, V.M.

Measuring the energy and power of optical quantum oscillators.
Izm. tekh. no.5:37-41 My '65. (MIRA 18:8)

BALIN, A.F.; VALITOV, R.Kh.

Automatic forging rolls. Kuz.shtam. proizv. 3 no.1:18-23 Ja '61. (MIRA 14:1)

(Forging machinery) (Rolling mills)

BALIN, A.F.; VALITOV, R.Kh.; KORACHISTOV, A.N.

Experience in coarse thread rolling. Kuz.-shtam.proizv. 4 no.12:9-11 D '62. (MIRA 16:1)
(Rolling (Metalwork)) (Screw threads)

SHNEYDER, Yuriy Grigor'yevich, kand. tekhn. nauk, dots.;
VALITOV, R.Z., red.

[Technological guarantee of the surface quality of machine and instrument parts; verbatim report of a lecture delivered at the Leningrad House of Scientific and Technical Propaganda in March 1963] Tekhnologicheskoe obespechenie kachestva poverkhnosti detalei mashin i priborov; stenogramma lektsii, prochitannoi v LDNTP v marte 1963. g. Leningrad, 1964. 33 p. (MIRA 17:9)

VALITOV, S.A., aspirant

Secretory function of the stomach resected for peptic ulcer. Kaz. med.zhur. 40 no.4:37-42 Jl-Ag '59. (MIRA 13:2)

1. Iz kafedry gospital'noy khirurgii No2 (zaveduyushchiy - prof. I.V. Domrachev) Kazanskogo meditsinskogo instituta i kafedry patofiziologii (zaveduyushchiy - prof. N.A. Krylova) Kazanskogo veterinarnogo instituta.

(PEPTIC ULCER) (STOMACH--SECRETIONS)

VALITOV, S.A., assistent

Change in the pepsin-forming and acid-forming function in gastric and duodenal ulcer under the influence of various forms of novocaine block. Kaz. med. zhur. no. 2:35-41 Mr-Ap '61. (MIRA 14:4)

1. Kafedra gospital'noy khirurgii No. 2 (zav. - prof. I.V. Domrachev [deceased]) Kazanskogo moditsinskogo instituta i kafedra patofiziologii (zav. - prof. N.A. Krylova) Kazanskogo veterinarnogo instituta.
(STOMACH--SECRETIONS) (PEPTIC ULCER) (NOVOCAINE)

Valitov, S. K. Caud Agricult. Sci

Dissertation: "Cross-Breeding of Local Coarse-Wooled Sheep with Fine-Wooled Rams on Collective Farms in the Bashkir ASSR."

21 November 49

Moscow Fur (and Pelt) Inst

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Sum 71

KHIMICH, V.F.; VALITOV, V.A.

Hydrogen determination in the process of mud-analysis logging.
Razved. i prom. geofiz. no.47:97-100 '63. (MIRA 16:8)
(Prospecting) (Drilling fluids)

VALITOV, Z. G. Engr

Interpland Stakhanovite School for Milling Machine Operators

Vest Mash p. 86, Sep 51

SHPAKOV, I.M., red.; ABDRAKHMANOV, M.I., red.; BABICHEV, R.I., inzh., red.; BOGOYAVLENSKIY, V.F., red.; VALITOV, Z.G., red.; ROMANOV, Yu.D., red.; SAYFULLIN, S.Sh., red.; ZAYFULLIN, I.Kh., tekhn. red.

[New devices for making gas analyses and automatically regulating the temperature of various media] Novye pribory gazovogo analiza i avtomaticheskogo regulirovaniia temperatury razlichnykh sred. Kazan', 1961. 169 p. (MIRA 15:7)

1. Tatar A.S.S.R. Samostoyatel'noye konstruktorsko-tekhnologicheskoye byuro po proyektirovaniyu meditsinskikh i fiziologicheskikh priborov. 2. Glavnyy inzhener Samostoyatel'nogo konstruktorsko-tekhnologicheskogo byuro po proyektirovaniyu meditsinskikh i fizologicheskikh priborov (for Abdrakhmanov).
(Scientific apparatus and instruments) (Thermostat)

RAKHLIN, L.M., prof., red.; ABDRAKHMANOV, M.I., zam. red.; ROMANOV, Yu.D., red.; VALITOV, Z.G., red.; SAYFULLIN, S.Sh., red.; ZAYNULLIN, I.Kh., tekhn. red.

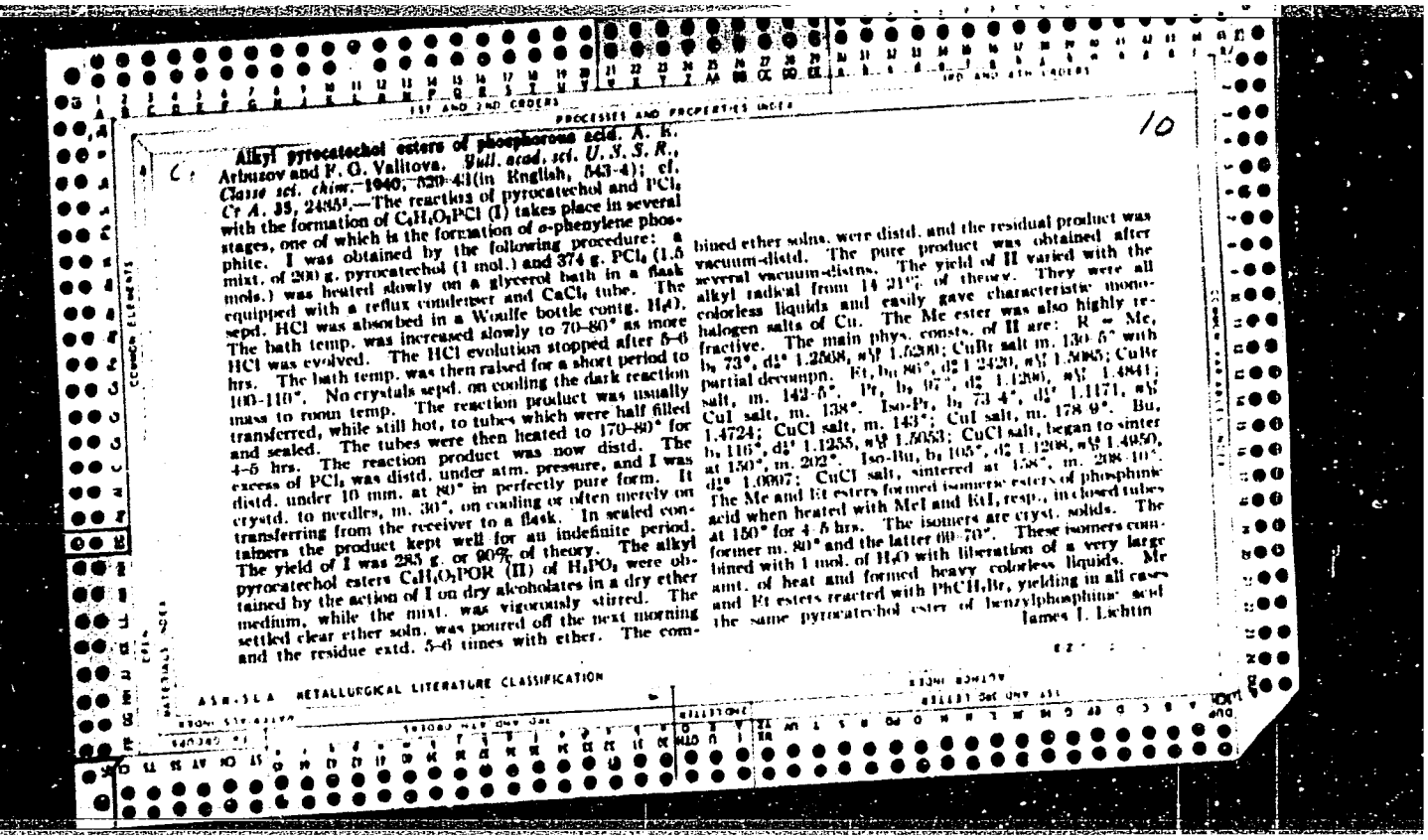
[Transactions of the Joint Conference of Designers, Physiologists and Physicians. Dedicated to the Methods of Studying Gas Exchange under Normal and Pathological Conditions] Trudy Sovmestnoy konferentsii konstruktorov, fiziologov i vrachei, posviashchennoi metodam izucheniia gazovogo obmena pri fiziologicheskikh i patologicheskikh sostoianiiakh, 1960. Pod red. L.M.Rakhlina. Kazan', Tatsovnarkhoz, 1961. 183 p. (MIRA 15:7)

1. Sovmestnaya konferentsiya konstruktorov, fiziologov i vrachey, posvyashchennaya metodam izucheniya gazovogo obmena pri fiziologicheskikh i patologicheskikh sostoyaniyakh, 1960. 2. Samostoyatel'noye konstruktorsko-tekhnologicheskoye byuro po proyektirovaniyu meditsinskikh i fiziologicheskikh priborov, Kazan' (for Abdrakhmanov).
(RESPIRATION)

TOLPEGINA, T.B.; VALITOVA, E.K.

Mechanism of the allergic reaction of the gallbladder. Pat. fiziol. i eksp. terap. 8 no.1:33-37 Ja-F '64. (MIRA 18:2)

1. Kafedra patologicheskoy fiziologii (zav.- prof. M.A. Yerzin) Kazanskogo meditsinskogo instituta.



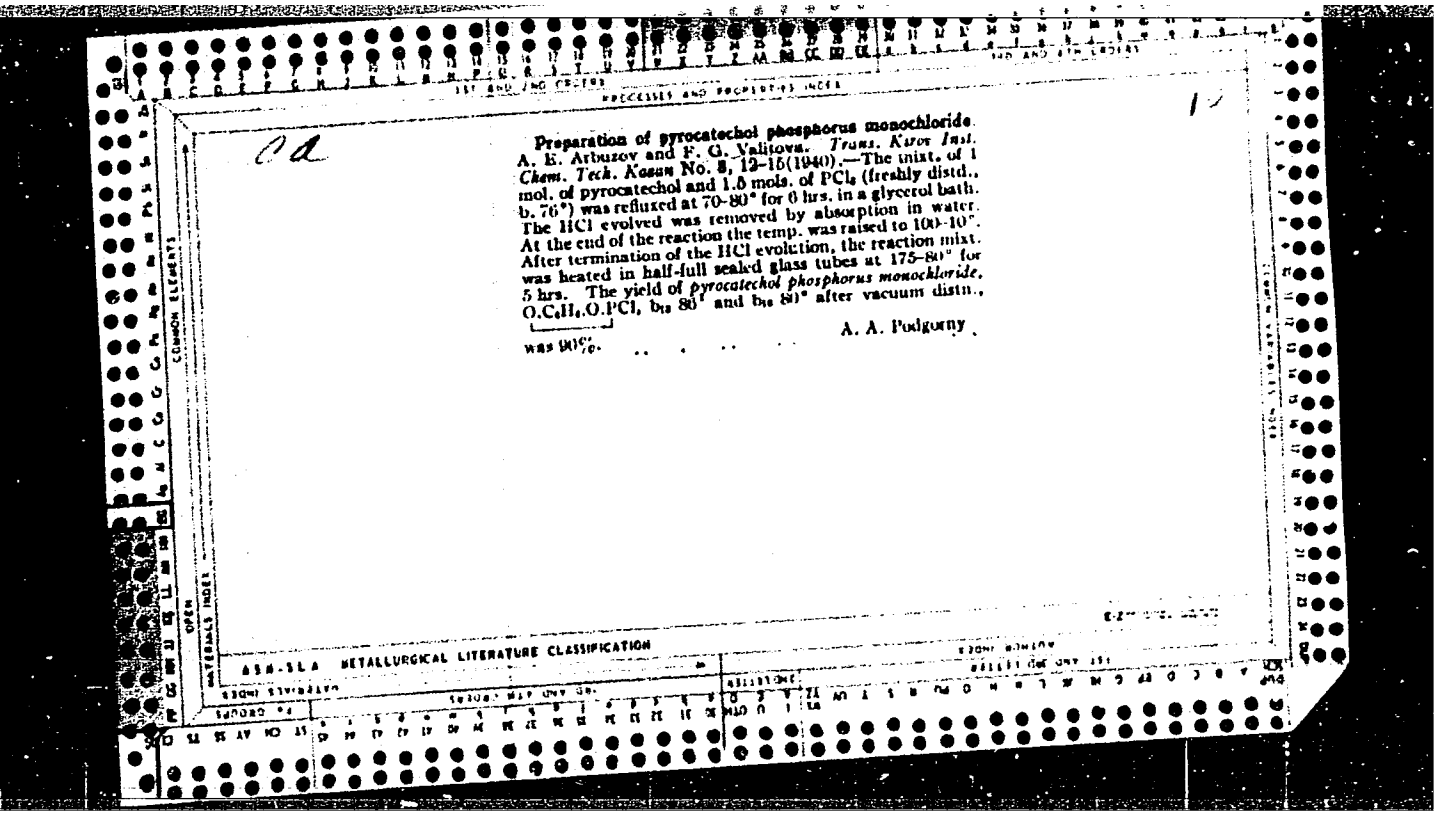
PROCESSES AND PROPERTIES INDEX

10

Alkyl pyrocatechol esters of phosphorous acid. A. E. Arbuzov and F. G. Valitova. *Bull. acad. sci. U. S. S. R., Classe sci. chim.* 1940, 539-43 (in English, 543-4); cf. *C. A.* **35**, 2455⁵.—The reaction of pyrocatechol and PCl_3 with the formation of $C_6H_4O_2PCl$ (I) takes place in several stages, one of which is the formation of *o*-phenylene phosphite. I was obtained by the following procedure: a mixt. of 200 g. pyrocatechol (1 mol.) and 374 g. PCl_3 (1.5 mols.) was heated slowly on a glycerol bath in a flask equipped with a reflux condenser and $CaCl_2$ tube. The sepd. HCl was absorbed in a Woulfe bottle contg. H_2O. The bath temp. was increased slowly to 70–80° as more HCl was evolved. The HCl evolution stopped after 5–6 hrs. The bath temp. was then raised for a short period to 100–110°. No crystals sepd. on cooling the dark reaction mass to room temp. The reaction product was usually transferred, while still hot, to tubes which were half filled and sealed. The tubes were then heated to 170–80° for 4–5 hrs. The reaction product was now distd. The excess of PCl_3 was distd. under atm. pressure, and I was distd. under 10 mm. at 80° in perfectly pure form. It crystd. to needles, m. 30°, on cooling or often merely on transferring from the receiver to a flask. In sealed containers the product kept well for an indefinite period. The yield of I was 285 g. or 90% of theory. The alkyl pyrocatechol esters $C_6H_4O_2POR$ (II) of H_3PO_3 were obtained by the action of I on dry alcoholates in a dry ether medium, while the mixt. was vigorously stirred. The settled clear ether soln. was poured off the next morning and the residue extd. 5–6 times with ether. The combined ether solns. were distd. and the residual product was vacuum-distd. The pure product was obtained after several vacuum-distns. The yield of II varied with the alkyl radical from 14 21% of theory. They were all colorless liquids and easily gave characteristic monohalogen salts of Cu. The Me ester was also highly refractive. The main phys. consts. of II are: R = Me, b_9 73°, d_4^{20} 1.2508, n_D^{20} 1.5280; CuBr salt m. 130.5° with partial decompn. Et, b_{11} 80°, d_4^{20} 1.2420, n_D^{20} 1.5085; CuBr salt, m. 142–5°. Pr, b_9 97°, d_4^{20} 1.1280, n_D^{20} 1.4841; CuI salt, m. 138°. Iso-Pr, b_9 73.4°, d_4^{20} 1.1171, n_D^{20} 1.4724; CuCl salt, m. 143°; CuI salt, m. 178.9°. Bu, b_9 116°, d_4^{20} 1.1255, n_D^{20} 1.5053; CuCl salt, began to sinter at 150°, m. 202°. Iso-Bu, b_9 105°, d_4^{20} 1.1208, n_D^{20} 1.4950, d_4^{20} 1.0907; CuCl salt, sintered at 158°, m. 208–10°. The Me and Et esters formed isomeric esters of phosphinic acid when heated with MeI and EtI, resp., in closed tubes at 150° for 4–5 hrs. The isomers are cryst. solids. The former m. 80° and the latter 69–70°. These isomers combined with 1 mol. of H_2O with liberation of a very large amt. of heat and formed heavy colorless liquids. Me and Et esters reacted with $PhCH_2Br$, yielding in all cases the same pyrocatechol ester of benzylphosphinic acid.

James I. Lichtin

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Preparation of pyrocatechol phosphorus monochloride. A. E. Arbuzov and F. G. Valitova. *Trans. Kirov Inst. Chem. Tech. Kazan* No. 8, 12–15(1940).—The mixt. of 1 mol. of pyrocatechol and 1.5 mols. of PCl_3 (freshly distd., b. 76°) was refluxed at 70–80° for 6 hrs. in a glycerol bath. The HCl evolved was removed by absorption in water. At the end of the reaction the temp. was raised to 100–10°. After termination of the HCl evolution, the reaction mixt. was heated in half-full sealed glass tubes at 175–80° for 5 hrs. The yield of *pyrocatechol phosphorus monochloride*, $O.C_6H_4.O.PCl$, b_{15} 80° and b_{16} 80° after vacuum distn., was 90%.

A. A. Podgorny

Chemical Abst.
VALITOVA, Vol. 48 No.8
F. G. Apr. 25, 1954
Organic Chemistry

(2) Chem

Derivatives of phosphorous acid that contain the cyclohexyl radical. A. E. Arbuzov and F. G. Valitova. *Bull. acad. sci. U.S.S.R., Classe sci. chim.* 1952, 725-8(Engl. translation).—See *C.A.* 47, 10462e.

H. L. H.

11-11-54

ARBUZOV, A.Ye.; VALITOVA, F.G.

Action of triarylbromomethanes on alkyl pyrocatechyl esters of phosphorous acid. Zhur. Obshchey Khim. 22, 1479-83 '52. (MLRA 5:9)
(CA 47 no.18:9290 '53)

1. Kazan Chem.-Technol. Inst.

VALITOVA, F. G.
Vol. 48 No. 8
Apr. 25, 1954
Organic Chemistry

(3 over)

Action of triarylbromomethanes on alkyl pyrocatechyl esters of phosphorus acid. A. E. Arbuzov and F. G. Valitova. *J. Gen. Chem.* (U.S.S.R.) 22, 1523-7(1952) (Engl. translation).—See *C.A.* 47, 9290a. H. L. H.

11-11-54

VALITOVA, F. G.

PA 234T9

USSR/Chemistry - Organophosphorus Compounds 1 Apr 52

"Study of the Phosphorus-Containing Members of the Products of the Reaction in Which Free Radicals Are Obtained by the Method of A. Ye. and B. A. Arbuzov," A. Ye. Arbuzov, F. G. Valitova

"Dok Ak Nauk SSSR" Vol 83, No 4, pp 577-580

Among the products of the reaction of triphenylbromomethane with sodium diethylphosphite, the presence of subphosphoric acid ester was established. Its presence was proved by converting it to benzylphosphonic

234T9

and triphenylmethylphosphonic acids by means of benzyl bromide and triphenylbromomethane. A cryst compd of cuprous bromide with the ethyl ester of pyrophosphoric acid was obtained as a result of the reaction of the copper salt on esters of subphosphoric acid.

234T9

VALITOVA, F.G.

ARBUZOV, A.Ye.; VALITOVA, F.G.

Studying the phosphorus containing products of the reaction producing free radicals by the method of A.E.Arbuzov, and B.A.Arbuzov. Soob.o nauch.rab.chl.VKHO no.2:21 '53. (MIRA 10:10)
(Phosphorus) (Radicals (Chemistry))

VALITOVA, F. G.

USSR/ Organic Chemistry - Synthetic organic chemistry E-2

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 11795

Author : Arbuzov A.Ye., Valitova F.G.
Inst : Department of Chemical Sciences, Academy of Sciences USSR
Title : On Pyrocatechol Esters of Pyrophosphorous Acid

Orig Pub : Izv. AN SSSR, Otd. khim. n., 1956, No 6, 681-683

Abstract : On reaction of pyrocatechol chlorophosphite $C_6H_4O_2PCl$ (I) or $C_6H_4O_2PBr$ with $(C_2H_5O)_2PONa$ (II) there are obtained the pyrophosphites $C_6H_4O_2POP(OC_2H_5)_2$ (III) and $(C_6H_4O_2P)_2O$ (IV). With CuCl, CuBr and CuI III forms resins while IV yields solid addition products which could not be purified. From $(C_2H_5O)_2PSONa$ and I was obtained $C_6H_4O_2POPS(OC_2H_5)_2$ (V).

To II (from 27 g $(C_2H_5O)_2POH$ and 4.1 g Na in 250 ml ether) are added 32 g I and the mixture is heated for 1 hour, yield of III 13.79%,

Card 1/2

USSR/ Organic Chemistry - Synthetic organic chemistry E-2

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 11795

BP 115-116°/1 mm, $n^{20}D$ 1.4800, d_4^{20} 1.1816. Yield of IV 14.8%, BP 170-172°/1 mm, $n^{20}D$ 1.5502, d_4^{20} 1.3107. On saponification of IV at 140° is obtained pyrocatechol (VI). On heating 1 g III and 1.17 g (C_6H_5) CBr (170-175°) and saponification with HCl acid there are obtained $(C_6H_5)_3CPO(OH)_2$ and VI. Yield of V (in benzene) 10.6%, BP 145-147°/ mm, $n^{20}D$ 1.5229, d_4^{20} 1.2846.

Card 2/2

Valitova F. G.

ARBUZOV, A.Ye.; VALITOVA, F.G.

Obtaining the free radical α,α-diphenyl-β-trinitrophenylhydrazyl.
Zhur. ob. khim. 27 no.9:2354-2356 S '57. (MIRA 11:3)

1.Khimicheskiy institut Kazanskogo filiala AN SSSR.
(Hydrazyl) (Chemistry, Organic--Synthesis)

5 (3, 4)

AUTHORS: Arbuzov, A. Ye., Academician, Valitova, F. G., Garif'yanov, N. S., Kozyrev, B. M.

SOV/20-126-4-23/62

TITLE: Paramagnetic Resonance of α,α-Diphenyl-β-picryl-hydrazyl Obtained From Different Solvents (O paramagnitnom rezonanse α,α-difenil-β-pikrilgidrazila, poluchennogo iz razlichnykh rastvoriteley)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 4, pp 774-776 (USSR)

ABSTRACT: The data given by various authors on the width of the line of the paramagnetic resonance of the compound (DPhPH) mentioned in the title, vary considerably: from ~1 to ~5 Oersted. In order to explain this fact, the first author suggested to deal with the subject mentioned in the title. DPhPH was produced according to the method described in reference 3 which differs from the Goldschmidt method (Ref 4). The solvents used were: benzene, toluene, xylene (isomeric mixture), pyridene, bromoform, carbon tetrachloride, chloroform and carbon disulfide. For the method of measuring the resonance see reference 5. The values of the width of the lines of the paramagnetic absorption $(\Delta H)_{1/2}$ mentioned in the title, show

that the nature of the solvent has a considerable influence on the width of the line. Naturally this leads to the conclusion that the molecules of the solvent form part of the crystalline lattice of the DPhPH (Refs 6-9). In no case however, there is a guarantee that the experimenter dealt with chemically pure compounds. The data of table 1 show that the solvents used here, are divided into two groups, according to their influence on the width of the line: a. compounds of the cyclic type, b. compounds containing no cycles. In DPhPH specimens of the group a. a narrowing of the absorption line takes place, in consequence of cooling and of an increase of their frequency. Group b. in such cases shows a widening of this line. On the whole it may be said that the specimens of group a. despite of their broader lines, are more magnetically isotropic than the specimens of group b. All this has to be considered as something more or less provisional. The observed dependences can only be explained after further investigation. Furthermore both DPhPH groups show a different influence of the atmospheric oxygen on the breadth of line. On the whole widening of the line by means of O_2 is reversible.

Finally experiments of the authors are described in which one solvent (chloroform) was replaced by another (benzene). The crystals developed by chloroform, showed wider lines after they had been recrystallized with benzene. With a reverse sequence of the solvents used, the crystals maintained the line of a benzene specimen. Thus it seems that the affinity of benzene and DPhPH is stronger than that of chloroform. If DPhPH is used as a standard for defining the number of paramagnetic centres in different substances, it has to be done very carefully. Only a DPhPH preparation from a certain solvent may be used. In the case of a DPhPH synthesis from other solvents, the exact details of the experiment have to be given, or the experimenter will get various results. There are 1 table and 13 references, 3 of which are Soviet.

Paramagnetic Resonance of α,α-Diphenyl-β-picryl-hydrazyl Obtained From Different Solvents

SOV/20-126-4-23/62

ASSOCIATION: Fiziko-tekhnicheskiy institut Kazanskogo filiala Akademii nauk SSSR (Institute of Physics and Technology of the Kazan' Branch of the Academy of Sciences, USSR)
Khimicheskiy institut Kazanskogo filiala Akademii nauk SSSR (Institute of Chemistry of the Kazan' Branch of the Academy of Sciences, USSR)

SUBMITTED: May 13, 1959

Card 4/4

ARBUZOV, A. YE., VALITOVA, F.G.

NAphthylenesalkyl esters of phosphorous acid.*

Khimiya i Primeneniye Fosfororganicheskikh Soyedineniy (Chemistry and application of organophosphorus compounds) A. Ye. Arbuzov, ed. Publ. by Kazan Affil., Acad. Sci. USSR, Moscow 1962, 432 pp.

Collection of complete papers presented at the 1959 Kazan conference on Chemistry of Organophosphorus Compounds.

ARBUZOV, A.Ye.; VALITOVA, F.G.

Investigations in the field of [illegible]-diphenyl-β-picrylhydrazine.
Izv. AN SSSR Otd.khim.nauk no.2:354 F '62. (MIRA 15:2)

1. Khimicheskiy institut Kazanskogo filiala AN SSSR.
(Hydrazine)

S/020/62/144/003/027/030
B124/B101

AUTHORS: Valitova, F. G., and Il'yasov, A. V.

TITLE: The electron paramagnetic resonance in concentrated α,α-diphenyl-β-picrylhydrazyl solutions

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 144, no. 3, 1962, 600-601

TEXT: The dependence of the relaxation time T_1 and T_2 on concentration was determined by continuous saturation at a frequency ν = 460 Mc/sec in α,α-diphenyl-β-picrylhydrazyl solutions in benzene, toluene, and chloroform for concentration between 0.17 and 0.025 moles/liter at temperatures between 240 and 320°K. There is only a single paramagnetic absorption line with a distance of 4.3 oe between the inflection points which corresponds to the maximum concentration. The ratio $\langle \Delta H^4 \rangle^{1/4} \langle \Delta H^2 \rangle^{1/2}$ of 1.38 is indicative of a Lorenz-type absorption curve. When the concentration C is 0.025 moles/liter, exchange interactions become so small that the hyperfine structure characteristics reappear. T_2 is calculated from the relation $T_2 = 1/\pi\sqrt{3}\delta\nu$, where $\delta\nu$ is the line

Card 1/3

The electron paramagnetic ...

width in frequency units; whereas T_1 is calculated from the saturation equation $Z = (1 + 0.25\gamma^2 H_\nu^2 T_1 T_2)^{-1}$, where Z is the saturation coefficient, γ is the gyromagnetic ratio, and H_ν is the amplitude of the high-frequency magnetic field. Relaxation time is found to be independent of the type of solvent used. The same order of magnitude of T_1 and T_2 for concentrations of 0.17 moles/liter is indicative of a strong interaction exchange. T_1 increases as compared to T_2 in less concentrated solutions, and both become dependent on temperature. The heat-accumulator model developed by N. Bloembergen and S. Wang is used to interpret the results obtained. In the solution where the concentration is highest and the interaction exchange is large, the energy absorbed by the Zeeman system is transferred to the exchange system with the relaxation time $T_1 \approx T_2$, where T_1 is the spin-lattice relaxation time and T_2 the spin-spin relaxation time. The fact that the relaxation time is independent of temperature shows that it is not related to the Brownian motion of the paramagnetic molecules. On dilution, exchange is reduced and relaxation due to the Brownian motion of radical molecules increases. It is also found that the exchange frequency

$\omega_e \geq 10^{10}$ sec^{-1}. There are 1 figure and 1 table. The most important English-language reference is: N. Bloembergen, S. Wang, Phys. Rev., 93, 72 (1954).

ASSOCIATION: Fiziko-tekhnicheskiy institut Kazanskogo filiala Akademii nauk SSSR (Physicotechnical Institute of the Kazan' Branch of the Academy of Sciences USSR)

PRESENTED: January 26, 1962, by A. Ye. Arbuzov, Academician

SUBMITTED: January 24, 1962

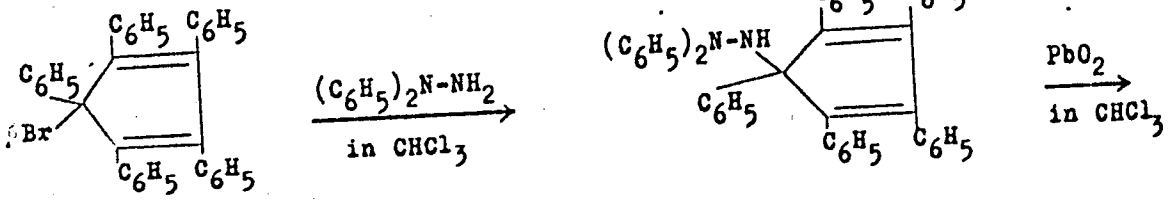
S/020/62/147/001/015/022
B106/B101

AUTHORS: Arbuzov, A. Ye., Academician, Valitova, F. G., Il'yasov, A. V., Kozyrev, B. M., Yablokov, Yu. V.

TITLE: Study of the free radical α,α-diphenyl-β-pentaphenyl-cyclopentadienyl hydrazyl by the e.p.r. method

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 147, no. 1, 1962, 99-102

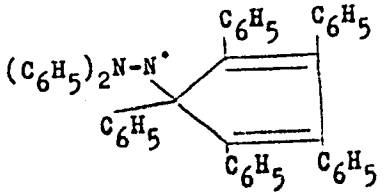
TEXT: The e.p.r. spectrum of the free radical α,α-diphenyl-β-pentaphenyl-cyclopentadienyl hydrazyl (I) was studied both in solution and in its crystalline state. The synthesis of I was:



Card 1/4

S/020/62/147/001/015/022
B106/B101

Study of the free radical ...



(I). Data for the radical: yield 70-80%; small bright-orange crystals with a melting point $>180^{\circ}C$ (decomposition); soluble in benzene, chloroform, alcohol, acetonitrile, glacial acetic acid and dioxane. In dilute solutions ($< 10^{-3}$ moles/l), the spectra show a hyperfine structure, the analysis of which proves that the unpaired electron in I remains mainly on the nitrogen atoms. A comparison of the e.p.r. spectrum of I with the spectrum of the α,α-diphenyl-β-picryl hydrazyl radical (DPPH) showed that the additional hyperfine structure is due solely to the protons of the α-phenyl groups. It may be explained by the interaction of the unpaired electron with the 2,4,6-protons of one of the two α-phenyl groups. The value obtained for the constant a of hyperfine coupling was 1.7 oersteds, and for ΔH_n 1.1 oersteds. The relative

Study of the free radical ...

stability of related free radicals from the e.p.r. spectra are estimated by the method of J. A. Weil, K. V. Sane, J. M. Kinkade (J. Phys. Chem., 65, 710 (1961)) showed that I is chemically more stable than DPPH. Its stability may be due to steric factors reducing the possibility of chemical reactions with other substances. The values obtained from the e.p.r. spectra of I in finely crystalline state, which may contain solvent, were 15.7 ± 0.3 oersteds for ΔH at 295°K, 10.5 ± 0.3 oersteds at 77°K, 1.43 for r at 295°K, and 1.45 at 77°C ($r = \langle \Delta H^4 \rangle^{1/4} / \langle \Delta H^2 \rangle^{1/2}$). The g-tensor at 295°K is: $g_1 = 2.0039 \pm 0.0001$, $g_2 = 2.0051 \pm 0.0001$, and $g_3 < g_1$. The considerable difference between these values and the g-factor of DPPH suggests that the molecular structure of the free radical considerably affects the residual spin - orbital coupling and anisotropy of the g-factor. There are 3 figures and 1 table. The most important English-language references are: M. M. Chen, K. V. Sane et al., J. Phys. Chem., 65, 713 (1961); B. Kubo, K. Tomita, J. Phys. Soc. Japan, 9, 888 (1954); F. K. Kneübuhl, J. Chem. Phys., 33, 1074 (1960).

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Study of the free radical ...

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B106/B101

ASSOCIATION: Fiziko-tekhnicheskiy institut Kazanskogo filiala Akademii nauk SSSR (Physicotechnical Institute of the Kazan' Branch of the Academy of Sciences USSR); Khimicheskiy institut im. A. Ye. Arbuzova Akademii nauk SSSR (Chemical Institute imeni A. Ye. Arbuzov of the Academy of Sciences USSR)

SUBMITTED: August 8, 1962

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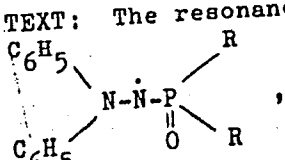
S/020/62/147/004/017/027
B107/B186

AUTHORS: Arbuzov, A. Ye., Academician, Valitova, F. G., Il'yasov, A. V., Kozyrev, B. M., Yablokov, Yu. V.

TITLE: Electron paramagnetic resonance in solutions of some free radicals of the phosphono-hydrazyl series

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 147, no. 4, 1962, 839-842

TEXT: The resonance spectra of the following radicals were studied:



, where R = OC_2H_5 (I), OC_6H_5 (II), C_6H_5 (III). $1 \cdot 10^{-3}$ molar solutions in acetonitrile and chloroform were studied. A РЭ-1301 (RE-1301) radiofrequency spectrometer with a 9330 Mc frequency of the magnetic field was used. In all cases, a hyperfine structure of five equidistant lines was caused by interaction of the unpaired electron with the two N^{14} atoms. The spectrum is described by the spin Hamiltonian:

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Electron paramagnetic resonance ...

$\hat{\mathcal{H}} = g\beta H\hat{S} + A_1\hat{S}\hat{I}_{N_1} + A_2\hat{S}\hat{I}_{N_2}$, where β is the Bohr magneton, $g \approx g$ (α,α-diphenyl-β-picryl hydrazyl) = 2.0036, H is the value of the static magnetic field, $S = 1/2$; $I_{N_1} = I_{N_2} = 1$. The constants A_1 and A_2, and the width δH between maximum and minimum of the first derivative of the individual hyperfine structure line were obtained through comparison with theoretically plotted curves using the given parameters. Calculated data agreed well with those obtained by experiments. $A_1 + A_2$ values found for phosphono-hydrazyls (maximum: 11.4 oe in azetonitrile, minimum: 9.4 in chloroform) were considerably less than the known value of 17.52 oe established for α,α-diphenyl-β-picryl-hydrazyl. A hyperfine structure caused by the P^{31} nucleus was not found. The production of phosphono-hydrazyls followed the reaction $(C_6H_5)_2N\text{-}\underset{H}{N}\text{-}P(C_6H_5)_2$ ←

$$\xleftarrow{(C_6H_5)_2PCl} (C_6H_5)_2\text{-}NH_2 \xrightarrow{R_2P(O)Cl} (C_6H_5)_2N\text{-}\underset{H}{N}\text{-}\underset{O}{P}R_2;$$

and oxidation:

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$(C_6H_5)_2N\text{-}N\text{-}PR_2 \xrightarrow{PbO_2} (C_6H_5)_2\text{-}N\text{-}\dot{N}\text{-}PR_2$ (H; O; O). Reaction yields (70-75%) and physical properties of phosphono-hydrazyls were tabulated. There are 1 figure and 2 tables.

ASSOCIATION: Khimicheskiy institut im. A. Ye. Arbuzova Akademii nauk SSSR (Chemical Institute imeni A. Ye. Arbuzov of the Academy of Sciences USSR); Piziko-tekhnicheskiy institut Kazanskogo filiala Akademii nauk SSSR (Physicotechnical Institute of the Kazan' Branch of the Academy of Sciences)

SUBMITTED: September 15, 1962

VALITOVA, F.G.; IL'YASOV, A.V.; SOTNIKOVA, N.N.; BAYGIL'DINA, S.Yu.

Electron paramagnetic resonance study of electrochemically generated radicals of some hydrazines. Zhur.strukt.khim. 6 no.5:777-779 S-O '65. (MIRA 18:12)

1. Institut organicheskoy i fizicheskoy khimii AN SSSR, Kazan'.

L 31461-66 EWT(m)/EWP(j)/T WW/JW/JWD/RM

ACC NR: AP6023114 SOURCE CODE: UR/0379/66/002/001/0142/0143

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ORG: Institute of Organic and Physical Chemistry, AN SSSR, Kazan' (Institut organicheskoy i fizicheskoy khimii AN SSSR)

TITLE: Electrochemical generation of hydrazyl radicals

SOURCE: Teoreticheskaya i eksperimental'naya khimiya, v. 2, no. 1, 1966, 142-143

TOPIC TAGS: electrochemistry, free radical, hydrazine derivative, electrolytic cell, electron spectrum, electron paramagnetic resonance, redox reaction, resonator/RE-1301 resonator

ABSTRACT: It is known that organic free radicals of the type α, α-diphenyl-β-picrylhydrazyl (DPPH) are obtained by treating the corresponding hydrazines with lead dioxide or other oxidizing agents. The authors studied the possibility of obtaining these radicals by electrochemical oxidation. An electrolytic cell containing platinum electrodes, as described previously, was placed directly into the RE-1301 radiospectrometer resonator. Measurements were made in acetonitrile, dimethylformamide, dioxane, alcohol, and aqueous-alcoholic solutions with a hydrazine concentration of about 10^{-2} M/liter. Tetramethyl-ammonium iodide and chloride were used as the supporting electrolyte. To improve the resolution of electron paramagnetic spectra, the

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